FINAL
ENVIRONMENTAL IMPACT STATEMENT
for a
Fire Management Plan

Santa Monica Mountains
National Recreation Area

September 2005

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California

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United States Department of the Interior – National Park Service

SUMMARY

The purpose of this environmental impact statement is to consider the impacts of implementing various fire management alternatives in the Santa Monica Mountains National Recreation Area (SMMNRA). In addition to providing information required by law and the 2001 Federal Fire Policy, this environmental impact statement will respond to the primary issues of concern raised during a series of internal and public scoping sessions.

This assessment analyzes four of seven alternatives developed through an interdisciplinary planning team. Following an initial evaluation, it became clear that three alternatives could not be reasonably implemented in a way that would meet program objectives given other constraints and laws. Consequently these three alternatives were considered but rejected and the bulk of this environmental impact statement focuses on the remaining four alternatives.

The park's previous *Fire Management Plan* (NPS, 1994) was based on a strategy of landscape level prescribed burning to create a landscape mosaic of different age classes in shrubland communities with the objective of reducing fire hazard and maintaining ecological health. This is alternative 1, the no action alternative, against which the other three alternatives are evaluated. The remaining three alternatives are a hierarchical combination of the fire management actions that will meet the goals of the *Fire Management Plan*. The range of fire management actions include mechanical fuel reduction, ecological prescribed fire, and strategic fuels treatment. Alternative 4 includes mechanical fuel reduction only, Alternative 3 includes mechanical fuel reduction and ecological prescribed fire, and Alternative 2 includes mechanical fuel reduction, ecological prescribed fire, and strategic fuels treatment. In addition, wildland fire suppression and public education and support are actions common to all four alternatives.

Alternative 2 is the environmentally preferred alternative, and has been selected for implementation. It provides the maximum potential environmental benefits and minimizes the adverse impacts of fire management actions. Alternative 2 is the most flexible alternative, utilizing all available fire management strategies identified to be appropriate in the Santa Monica Mountains. Alternative 1 is inappropriate to the fire climate of the Santa Monica Mountains, is infeasible to implement, and is the most environmentally damaging alternative. Alternative 4 effectively addresses structure protection at the wildland urban interface, but does not provide any of the ecological benefits from ecological prescribed burning included in Alternatives 2 and 3. Alternative 2 is considered superior to Alternative 3 because it would not eliminate the potential benefits from strategic fuels reduction. Although strategic fuels reduction has the potential for both impacts and benefits in most of the impact areas analyzed, individual strategic fuels reduction projects would be evaluated for their potential risk:benefit ratio according to the analytical procedure outlined in the discussion of fire hazard assessment (Figure 3-23).

Under the National Park Service (NPS) Organic Act and the General Authorities Act, as amended,

the NPS may not allow the impairment of park resources and values except as authorized specifically by Congress *(NPS Director's Order 55* or DO-55). Impairment is an impact that, in the professional judgment of the responsible NPS manager, would harm the integrity of park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources or values. Park managers have examined each potential impact of the preferred alternative and determined that the combination of actions provided for in this environmental assessment will not result in the impairment of any park resources and values.

Cover photo by Chuck Lovers. Courtesy of Los Angeles County Fire Department

Environmental Impact Statement

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Chapter One

INTRODUCTION

1 Purpose

The Santa Monica Mountains National Recreation Area (SMMNRA) is unusual within the National Park Service (NPS) because the recreation area is located adjacent to one of the world's largest urban areas. It is distinguished from many other national parks or recreation areas in that it is comprised of a mosaic of federal, state, and private lands. It is the NPS's best mainland example of a Mediterranean ecosystem, an ecosystem that has a limited worldwide geographic distribution and high biological diversity (http://www.biodiversityhotspots. org/xp/Hotspots). The SMMNRA is also an area that experiences high intensity wildfires which have periodically carried a heavy social cost from structural property losses and the massive fire fighting efforts required to protect development and lives at the wildland urban interface.

Wildland fire is a natural process in the southern California Mediterranean ecosystem with fire tolerant or fire dependent adaptations characteristic of many species in the ecosystem. Fire history has shaped the plant communities of SMMNRA and is a major factor affecting their diversity, productivity and distribution (Barbour and Major, 1988; Keeley, 2000; Rundel, 1986).

Fire management is the range of human activities that are used to either control or utilize fire. Fire management can be used to suppress, ignite, or modify behavior of fires in order to protect human life or property or modify ecosystem properties. It is well understood that aggressive fire suppression during the 20th century successfully excluded fire from certain forest landscapes, allowing the buildup of forest litter and excessive vegetation, creating conditions for intense, large-scale, wildfires (Agee et al, 1978; van Wagtendonk, 1985; Stephens, 1995, 1998). During the same time period there has been a dramatic increase in the number of people living in wildland areas that are prone to wildfires. Consequently the number of people and structures at risk from wildfire has dramatically increased as have the associated costs of fighting fires (CDF, 2000 http://www.fire.ca.gov/FireEmergencyResponse/HistoricalStatistics/PDF/00hist; National Fire Plan, 2002 http://www.fireplan.gov; California Fire Plan http://www.fire.ca.gov/FireEmergency Response/FirePlan/FirePlan.asp). In response to the convergence of these two trends, there has been a massive federal funding effort and substantial social and political pressure to reduce plant biomass with landscape level mechanical fuel modification or by reintroducing fire through prescribed burning (National Fire Plan, 2002).

Unfortunately, the forest model of *successful fire suppression* > *fuel buildup* > *extreme wildfires* is not true for all fire-adapted ecosystems. In the Mediterranean shrublands of southern California, fire suppression has not been successful in preventing large-scale, intense, wildfires and "fuel buildup" is the normal process of growth and maturation of the dominant chaparral

vegetation. Because fire has not been successfully excluded from southern California shrubland ecosystems, there is no need to introduce additional fire through management actions to restore southern California shrublands. In fact, the number of fires in the SMMNRA has increased throughout this century (Figure 3-8). This is attributed to population growth and expansion of the wildland urban interface zone (Keeley and Fotheringham, 2001; Keeley, 2002). It has been suggested that aggressive fire suppression in southern California is an ecologically positive management action that has been responsible for maintaining a more nearly normal fire regime than would occur in the absence of suppression (Keeley and Fotheringham, 2001).

In the growing wildland urban interface zone of the SMMNRA there is a need to manage wildland fire so that threats to life, property and park resources are reduced and fire's function as a natural process is maintained. Fire management actions in the SMMNRA need to deal primarily with fire hazards created by development at the urban wildland interface and not to correct "unnatural" fuel buildup on the landscape. The financial costs of fire management actions must be assessed and be commensurate with protection of the values at risk.

II Need For Action

Fire management actions are guided by fire management plans. Fire management plans are fundamental strategic documents that guide the full range of fire management activities. They are required by the *NPS Director's Order* 18 (NPS,1998) which states:

> *"Every park area with burnable vegetation must have a fire management plan approved by the superintendent,"*

and the 2001 Federal Wildland Fire Management Policy (hereafter, 2001 Federal Fire Policy), which reiterates:

> *"Complete, or update, Fire Management Plans for all areas with burnable vegetation."*

In 2001 the 1995 Federal Wildland Fire Management Policy was reviewed for all federal wildland fire agencies and subsequently will be referred to as the Guiding Principles and 2001 Federal Fire Policy. The review and recommendations took place in the context of the September 8, 2000 report to the President by the Secretaries of the Interior and Agriculture, *Managing the Impact of Wildfires on Communities and the Environment: a Report to the President in Response to the Wildfires of 2000* and the *Fiscal Year 2001 Interior and Related Agencies Appropriation Act*.

The review found the 1995 policy generally sound, although the 2001 version contains some changes and updates. In addition to emphasis placed on ecosystem sustainability, restoration, science, education and communication, and program evaluation, programs will also need to consider operational and implementation aspects as a result of issues raised in the *Cerro Grande Prescribed Fire Investigation Report* and the subsequent independent review report. The revised fire management policy for the NPS has been expressed in *NPS Director's Order* 18 and

Reference Manual 18. The revision of the fire management plan will reflect these changes in policy.

This plan will document how the park plans to accomplish land and resource objectives and to reduce the risk of fire to development adjacent to the park. This *Draft SMMNRA Fire Management Plan* and associated environmental impact statement presents four alternatives for the fire management program of the SMMNRA. The alternatives are based on park values, effective fire management strategies, NPS policy and applicable law. This document also addresses primary issues of concern raised during a series of internal and public scoping sessions.

III The Decision to Prepare an Environmental Impact Statement

The decision to prepare an Environmental Impact Statement (EIS) on the *Draft SMMNRA Fire Management Plan* was made by the Superintendent of SMMNRA after considering the scope, complexity, and public interest related to issues being addressed in the plan. Fire ecology and management are certainly among the most pervasive and complex influences on ecosystem processes and the human environment of the Santa Monica Mountains. The role of fire has implications for park use, ecosystem structure and function, and human activities throughout the region. This complexity and associated public interest suggested a level of analysis commensurate with an EIS. By completing an EIS for the *Draft SMMNRA Fire Management Plan*, sufficient analysis can be undertaken to assess the effects of particular alternatives and to ensure adequate involvement by the public and interested agencies.

Following the public comment period on the *Draft SMMNRA Fire Management Plan/EIS* and any necessary consultations for actions that may affect natural or cultural resources, a *Final SMMNRA Fire Management Plan/EIS* will be prepared and distributed to the public. At the conclusion of a 30-day waiting period, the NPS will prepare a Record of Decision. A summary document of the *SMMNRA Fire Management Plan*, will also be prepared and distributed. Following the Record of Decision, the recommendations of the new plan can begin to be implemented and the plan will become the working document guiding fire management programs across the SMMNRA.

This *Draft SMMNRA Fire Management Plan/EIS* was prepared to comply with the requirements of the National Environmental Policy Act (NEPA) and National Historic Preservation Act (NHPA) as well as the Endangered Species Act and the Wild and Scenic Rivers Act. The legal authority for preparing and implementing the *SMMNRA Fire Management Plan* is codified in 16 USC 1 through 4, which is the 1916 Organic Act for the NPS.

This document will screen each proposed alternative for compliance with these policies, plans, and laws.

IV Goals and Objectives of the SMMNRA Fire Management Plan

The *SMMNRA Fire Management Plan* will provide a detailed program of actions to carry out fire management policies and objectives on NPS lands in the SMMNRA. The goals and objectives of the plan have their foundation in the park's planning documents: the *General Management Plan* (2003), the *Resource Management Plan* (1999), as well as NPS and federal legislation and fire policy; the NPS Organic Act; and the enabling legislation establishing the SMMNRA.

The *SMMNRA Fire Management Plan* goals are the broad principles which guide development of the plan's specific management objectives and associated implementation actions. The goals are outlined below and the management objectives and implementation measures are listed in Table 1-1.

Goal 1

Provide for firefighter and public safety first in all fire management activities.

Goal 2

Reduce fire hazards in SMMNRA with the most effective fire management strategies consistent with NPS laws and policies.

Fire hazard is defined as ecological or social values that may be placed at risk from extreme fire behavior. Effective fire management strategies are those which maximize safety, protect life and property, and are cost effective for the values at risk. Social values include: park employees, visitors, neighboring communities, recreational opportunity, wilderness, prehistoric and historic cultural sites, historic structures, and contemporary structures, both government-owned and private.

Goal 3

Protect the park's ecological and cultural resources.

Ecological values include vegetation, wildlife, soil, water, natural processes, and air resources. Cultural values include prehistoric and historic cultural sites and historic structures.

Goal 4

Identify resource conditions and a hazard assessment of private property within and around the park boundary that require specific fire management actions.

Goal 5

Provide a decision framework for fire and resource managers to evaluate fire management proposals that provide protection of social values from wildfires or proposals that provide enhancement of resource values.

Social values include: park employees, visitors, neighboring communities, recreational opportunity, wilderness, prehistoric and historic cultural sites, historic structures, and contemporary structures, both government-owned and private. Resources include native vegetation, water, wildlife, natural processes, and air resources.

Table 1-1 Objectives and Implementation Strategies to Meet the Goals of SMMNRA Fire Management Plan

I Objective
During all fire management activities, firefighter and public safety are first priority.
Strategies • All fire personnel will comply with the National Wildfire Coordinating Group (NWCG) and agency fitness requirements and will have personal protective equipment appropriate to the job or assignment. • Qualifications and staff experience necessary to accomplish fire management program objectives in a safe manner will be established and promoted. • All safety standards and guidelines identified within the Interagency Incident Business Management Handbook will be followed. • The Job Hazard Analysis (JHA) process will be used for all potentially hazardous fire management activities.
II Objective
All SMMNRA fire management activities will be performed in accordance with the principles, policies, and recommendations of the following documents: Final Report of the Federal Wildland Fire Management Policy and Program Reviews, Departmental Manual, Parts 350-354 and 620 DO60, Aviation Management (in review).
Strategies The following key themes from the Final Report of the Federal Wildland Fire Management Policy and Program Reviews will be implemented by the park fire management officer into all fire management activities: • **Ecosystem sustainability** to recognize the role of fire in sustaining healthy ecosystems, restoration, rehabilitation of burnt lands, and the importance of sound science in fire management activities. • **Fire planning** with timely reviews of the park's fire management plan and related planning documents. • **Fire operations** with emphasis on safety, protection priorities, appropriate preparedness, appropriate suppression actions, use of wildland fire (prescribed fire), prevention activities, and roles and responsibilities in the wildland urban interface. — **Interagency coordination and cooperation** to include federal land management agency and agencies with supporting or related programs as full partners in wildland fire management activities and programs. — **Communication and education programs** to enhance understanding of the fire management mission for both internal and external audiences.

- All aviation policies and practices will be followed during SMMNRA fire management activities, should air operations become necessary, as described in the Department of Interior Departmental Manual, Part 350-354 and 620 DO60, Aviation Management. The park fire management officer or designee will stay abreast of aviation policy changes by maintaining periodic contact with the regional aviation manager.

III Objective

Identify areas for fire suppression, mechanical hazard fuel reduction, and strategic use of prescribed fire to achieve maximum benefit with the least impact.

Strategies

- Adopt an operational role in the wildland urban interface that includes wildland fire-fighting, hazard fuel reduction, cooperative prevention and education, and technical assistance..
- Identify and fund, on a cost-share basis, high-priority fuels management activities on federal land adjacent to wildland urban interface areas identified through a fire protection assessment process that considers relative values to be protected. These activities may involve adjacent non-federal lands.
- Use vegetation maps, fire history maps, and other tools to develop risk assessments which will identify and prioritize appropriate treatments.

IV Objective

Educate employees and the public about the scope and effect of wildland fire management, including fuels management, resource protection, prevention, hazard/risk assessment, mitigation and rehabilitation, and the role of fire in ecosystem management.

Strategies

- Support the development of evacuation plans for wildland urban interface communities within the mountains.
- Provide trailhead brochures on fire safety.
- Increase fire ecology and safety programs in schools.
- Encourage Fire Safe Councils and FIREWISE Communities.
- Increase public meetings and homeowners groups presentations.
- Place emphasis on fuels reduction on the private property owner.
- Explore grants for fire-safe construction.
- Establish and maintain an Internet site with fire safety information.
- Provide more interpretive programs on fire safety and ecology.
- Develop prevention plans to reduce number of human-caused ignitions.

V Objective

Stabilize and prevent degradation of natural and cultural resources lost in and/or damaged by impacts of wildland fires, fire suppression and/or fire management.

Strategies

- Employ minimum impact tactics, including adjusting tactics to, where feasible, avoid sensitive natural resources and cultural resources. Use brush blade for line building when a bulldozer line is determined as a necessary tactic, use helicopter long lines instead of constructing helispots, cold trail and use natural barriers instead of line construction. Other implementation guidelines can be found in Appendix C.
- Post-fire rehabilitation would be initiated through the Burned Area Emergency Rehabilitation (BAER) funding request process to mitigate a broad range of threats to natural and cultural resources critical to Santa Monica Mountains National Recreation Area mission and resource protection mandates. See RM18, Chapter 12 for guidelines to implement BAER.

VI Objective

Maintain the highest standards of professional and technical expertise in planning and safely implementing an effective wildland fire management program.

Strategies

- Implement annual program reviews.
- Implement training plans for each employee to reach target qualifications for the positions in the fire management organization.
- Conduct annual training appropriate to instructor qualifications.
- Attend conferences to keep abreast of the latest developments and technology applicable to fire management.

VII Objective

Integrate fire management with all other aspects of park management.

Strategies

- Develop a fire management program that is consistent with, and meets the goals of, the park's General Management Plan and Resource Management Plan.

VIII Objective

Manage wildland fire incidents in accordance with accepted interagency standards using appropriate management strategies and tactics and maximize efficiencies realized through interagency coordination and cooperation.

Strategies

- Establish and maintain co-operative fire management agreements with county and city fire departments.
- Recognize appropriate and acceptable interagency management strategies and tactics for incidents by using Minimum Impact Suppression Tactics where possible. See

RM18, Chapter 9, Exhibit 5.

- Attend interagency planning meetings prior to each fire season to enhance coordination and cooperation to maximize efficiency to manage wildland fire incidents.

IX Objective

Develop a scientific fire management program using the best available knowledge and technology to guide fire management actions to restore and preserve SMMNRA ecosystems and maintain long-term ecological integrity.

Strategies

- Use information gained through inventory, monitoring and review of research by others to evaluate and improve the fire management program; translate scientific knowledge into policy and management practices, including but not limited to:
    - — Research the role of fire in the southern California Mediterranean ecosystem.
    - — Identify how fire can be used to target exotic plant species for eradication.
    - — Research the effects of fire exclusion.
    - — Research how exotic plants affect native seed banks.
    - — Determine how current fire frequency affects the ecosystem with respect to the historic fire regime.
    - — Identify how post-fire recovery patterns may be used in restoration projects.

V Significance of the Santa Monica Mountains National Recreation Area

The SMMNRA is a unit of the NPS and is administered by the NPS. The recreation area was established by Congress in November 1978 to protect the largest expanse of mainland Mediterranean ecosystem in the national park system. Section 507(a) of the enabling legislation (P.L. 95-625) states:

> *"The Congress finds that –*
>
> *1) there are significant scenic, recreational, educational, scientific, natural, archeological, and public health benefits provided by the Santa Monica Mountains and the adjacent coastline;*
>
> *2) there is a national interest in protecting and preserving these benefits for the residents of and visitors to the area; and*
>
> *3) The State of California and its local units of government have authority to prevent or minimize adverse uses of the Santa Monica Mountains and adjacent coastline area and can, to a great extent, protect the health, safety and general welfare by the use of such authority."*

In accordance with the enabling legislation, the SMMNRA must be managed in a manner to preserve and enhance its scenic, natural, and historical setting and its public health value as an airshed for the Southern California metropolitan area while providing for the recreational and educational needs of the visiting public.

In addition to the NPS, there are many different public and private landowners managing land within the Santa Monica Mountains including the California State Parks, the Santa Monica Mountains Conservancy, local governments, land trusts, and individual property owners. Land management in the recreation area is a collaborative effort among the multiple land owners to protect natural, cultural, recreational, social, and scenic values.

VI Relationship With Federal Fire Policy

Wildland fire management activities conducted by the NPS are guided by NPS management policies, *Director's Order* 18 (1998), and the 2001 Federal Fire Policy. *Director's Order* 18 guides the development of NPS policy relative to fire management and dictates the program requirements for fire management plans. These requirements are listed in Table 1.2. The Federal Wildland Management Policy was revised in 2001. The main elements of this policy are listed in Table 1-3. The *Draft SMMNRA Fire Management Plan/EIS* is in compliance with these policies.

Table 1-2 National Park Service Fire Management Program Requirements

National Park Service Policy Directing Development of Fire Management Plans—Director's Order 18: Wildland Fire Management
Section 5 Program Requirements **Every park area with burnable vegetation must have a fire management plan approved by the superintendent.** All approved fire management plans will: • Reinforce the commitment that firefighter and public safety is the first priority. • Describe wildland fire management objectives, which are derived from land, natural and cultural resource management plans and address public health issues and values to be protected. • Address all potential wildland fire occurrences and consider the full range of wildland fire management actions. • Promote an interagency approach to managing fires on an ecosystem basis across agency boundaries and in conformance with the natural ecological processes and conditions characteristic of the ecosystem. • Include a description of rehabilitation techniques and standards that comply with resource management plan objectives and mitigate immediate safety threats. • Be developed with internal and external interdisciplinary input and reviewed by appropriate subject matter experts and all pertinent interested parties and approved by the park superintendent. • Comply with the National Environmental Policy Act (NEPA) and any other applicable regulatory requirements. • Include a wildland fire prevention analysis and plan. • Include fuels management analysis and plan. • Include procedures for short and long term monitoring to document that overall programmatic objectives are being met and undesired effects are not occurring.
Until a Fire Management Plan is approved, park areas must take an aggressive suppression action on all wildland fires, taking into account firefighter and public safety and resources to be protected within and outside the park.
Although resource impacts of suppression alternatives must always be considered in selecting a fire management strategy, resource benefits cannot be primary consideration unless there is an approved Fire Management Plan.

Table 1-3 2001 Federal Wildland Fire Management Policy

POLICY	2001 FEDERAL WILDLAND FIRE MANAGEMENT POLICY
Safety	Firefighter and public safety is the first priority. All Fire Management Plans and activities must reflect this commitment.
Ecosystem Sustainability	The full range of fire management activities will be used to help achieve ecosystem sustainability including its interrelated ecological, economic and social components.
Response to Wildland Fire	Fire, as a critical natural process, will be integrated into land and resource management plans and activities on a landscape scale, and across agency boundaries. Response to wildland fire is based on ecological, social, and legal consequences of the fire. The circumstances under which a fire occurs, and the likely consequences on firefighter and public safety and welfare, natural and cultural resources, and values to be protected, dictate the appropriate management response to the fire.
Use of Wildland Fire	Wildland fire will be used to protect, maintain, and enhance resources and, as nearly as possible, be allowed to function in its natural ecological role. Use of fire will be based on approved Fire Management Plans and will follow specific prescriptions described in operational plans.
Rehabilitation & Restoration	Rehabilitation and restoration efforts will be undertaken to protect and sustain ecosystems, public health, and safety, and to help communities protect infrastructure.
Protection Priorities	The protection of human life is the single, overriding priority. Setting priorities among protecting human communities and community infrastructure, other property and improvements, and natural and cultural resources will be based on the values to be protected, human health and safety, and the costs of protection. Once people have committed to an incident, these human resources become the highest value to be protected.
Wildland Urban Interface	The operational roles of federal agencies as partners in the Wildland Urban Interface are wildland firefighting, hazardous fuel reduction, cooperative prevention and education, and technical assistance. Federal agencies may assist with exterior structural protection activities under formal Fire Protection Agreements that specify mutual responsibilities of the partners, including funding. (Some federal agencies have full structural protection authority for their facilities on lands they administer; they may also enter into formal agreements to assist state and local governments with full structural protection.)
Planning	Every area with burnable vegetation must have an approved Fire Management Plan. Fire Management Plans are strategic plans that define a program to manage wildland and prescribed fires based on the area's approved land management plan. Fire Management Plans must provide for firefighter and public safety; include fire management strategies, tactics, and alternatives; address values to be protected and public health issues; and be consistent with resource management objectives, activities of the area, and environmental laws and regulations.

POLICY	2001 FEDERAL WILDLAND FIRE MANAGEMENT POLICY
Science	Fire Management Plans and programs will be based on a foundation of sound science. Research will support ongoing efforts to increase our scientific knowledge of biological, physical, and sociological factors. Information needed to support fire management will be developed through an integrated interagency fire science program. Scientific results must be made available to managers in a timely manner and must be used in the development of land management plans, Fire Management Plans, and implementation plans.
Preparedness	Agencies will ensure their capability to provide safe, cost-effective fire management programs in support of land and resource management plans through appropriate planning, staffing, training, equipment, and management oversight.
Suppression	Fires are suppressed at minimum cost, considering firefighter and public safety, benefits, and values to be protected, consistent with resource objectives.
Prevention	Agencies will work together and with their partners and other affected groups and individuals to prevent unauthorized ignition of wildland fires.
Standardization	Agencies will use compatible planning process, funding mechanisms, training and qualification requirements, operational procedures, values-to-be-protected methodologies, and public education programs for all fire management activities.
Interagency Cooperation & Coordination	Fire management planning, preparedness, prevention, suppression, fire use, restoration and rehabilitation, monitoring research, and education will be conducted on an interagency basis with the involvement of cooperators and partners.
Communication & Education	Agencies will enhance knowledge and understanding of wildland fire management policies and practices through internal and external communication and education programs. These programs will be continuously improved through the timely and effective exchange of information among all affected agencies and organizations.
Agency Administrator & Employee Roles	Agency administrators will ensure that their employees are trained, certified, and made available to participate in the wildland fire program locally, regionally, and nationally as the situation demands. Employees with operational, administrative, or other skills will support the wildland fire program as necessary. Agency administrators are responsible and will be held accountable for making employees available.
Evaluation	Agencies will develop and implement a systematic method of evaluation to determine effectiveness of projects begun under the 2001 Federal Fire Policy. The evaluation will assure accountability, facilitate resolution of areas of conflict, and identify resource shortages and agency priorities.

VII Relationship of the SMMNRA Fire Management Plan To Resource Management

Planning in the SMMNRA begins with the park's *General Management Plan* (GMP). SMMNRA's original GMP, adopted in 1980, was recently updated and officially adopted as of July, 2002. The SMMNRA's *General Management Plan* is the foundation document for managing the park. Implementation plans, which tier off of general management plans, focus on "how to implement an activity or project needed to achieve a long-term goal" (NPS 1998). The authority to prepare general management plans, as well as implementation plans, for national parks is given by the NPS Organic Act of 1916. The *Resource Management Plan* is such an implementation plan, and directives for preparing resource management plans are found in NPS Management Policies 2001, Chapter 4.

General Management Plan

The GMP mission goals are those goals that incorporate the mission, law, core values, and policies of the three principal park agencies to manage the recreation area (GMP, p. 38-44). Fire management will be consistent with the mission goals and include strategies to support and implement those goals.

- Protect and enhance species, habitat diversity and natural processes within the SMMNRA.
- Protect and restore native plant species and plant communities, such as coastal sage scrub, coastal live oak woodland, and valley oak savannas.
- Enact programs to combat and remove the encroachment of exotic flora and fauna into natural ecosystems when possible.
- Manage fire throughout the recreation area to mimic natural fire regimes as much as possible and reduce the threat of wildfires.
- Maintain or improve water quality throughout the SMMNRA. Manage riparian communities, natural stream characteristics, estuaries and coastal waters for their significant ecological value.
- Implement collaborative scientific research and innovative resource management programs among federal, state and local agencies to manage, restore, and maintain natural processes.

The NPS's policies with respect to fire and fire management in SMMNRA's are described in the *General Management Plan* (2003) and the *Resource Management Plan* (1999).

The *General Management Plan* (p. 207) states:

> *"It is the policy of Santa Monica Mountains National Recreation Area to manage natural*

areas in a manner that maintains and enhances ecological values while at the same time assuring public safety. The goal is to implement a fire management program that helps to maintain a fire regime that sustains natural biotic associations and ecosystem functions while providing effective and strategic defenses against wildfire.

The park's prescribed burning program would be revised to reflect an increased understanding of the potential ecological impacts of prescribed burning, a new understanding of extreme-weather fire behavior, and a recognition of the limited capacity of government agencies to implement prescribed burning. To this end, ecological management zones would be defined and established where vegetation is managed for ecological values, and dynamic fuel management zones for hazard reduction at the wildland urban interface."

Resource Management Plan

The *Resource Management Plan* (p. III-69) identifies the need to develop an ecologically based fire management program as a top priority conservation and restoration project as follows:

"Recent information on the effects of fire frequency, intensity, and extent on ecological communities in southern California, and new data on the effectiveness of prescribed fire programs to reduce wildfire risk, has led to a reassessment of fire management in the park. Currently the park is working to update its fire management program to reflect the most up-to-date scientific information. Ideally, an interagency fire management program implemented throughout the SMMNRA and surrounding region can be developed."

Finally, the *Resource Management Plan* identifies fire as "*an important ecological tool that resource managers can employ to achieve specific conservation or restoration objectives*." Several specific examples are identified as top priority conservation and restoration projects (RMP, p. III-67).

1) Restoration of Valley Oak Savanna: Explore the use of fire management for control of exotic annual grasses and the direct and indirect benefits and impacts of prescribed burning on oak establishment.

2) Restoration of Native Grasslands: Use fire to remove exotics and promote native species response.

Endangered Species Act

The Endangered Species Act requires that actions authorized, funded, or carried out by federal agencies not jeopardize the continued existence of listed species. Under section 7(a)(2) of the ESA (16 USC section 1536), federal agencies are required to consult with the U.S. Fish and Wildlife Service (USFWS) on actions which may affect listed species or critical habitat. Because this *SMMNRA Fire Management Plan* proposes actions that could affect the federally listed plant species and wildlife species in the Santa Monica Mountains, NPS will consult with USFWS on likely effects to those species.

VIII Interdisciplinary Planning Team

This environmental impact statement was produced by a 6-person interdisciplinary planning team that shared responsibility for scoping, researching, and writing. The team was comprised of staff specialists in the following disciplines: fire management, natural and cultural resources, plant ecology, public information and education, and fire ecology. Other subject matter experts contributed technical expertise for specific sections. A list of planning team members and other consultants is included in Chapter 6.

IX Decisions to be Made

The NPS will seek comments and observations from other agencies, interested organizations, and the public before selecting an environmentally preferred alternative in the final EIS. Several workshops and meetings with agencies and organizations at all levels will be conducted. Two public comment periods and eight public meetings will be held to solicit the public's involvement. Information obtained from this participation will be analyzed for it's environmental affects and possible mitigation measures and will be addressed in the final EIS. Then, with consideration of applicable laws and policies, the environmentally preferred alternative will be selected.

The selected alternative then becomes the basis of the *SMMNRA Fire Management Plan*, which is the 5-year implementation plan for the park's fire management actions. After five years, the *SMMNRA Fire Management Plan* will be reviewed and changed as necessary. Substantial changes, not previously analyzed as part of the environmental impact statement, would require additional environmental review consistent with NEPA and NHPA.

X Public Scoping and Issues Considered

Public scoping provides the opportunity for the public to provide input to the park on issues and alternatives that should be considered in the EIS. An "issue" is a concern that must be considered when designing and evaluating alternatives in an environmental assessment. Some issues come from requirements found in policy and law. For example, an EIS must consider plants, animals, special status species, and their habitats, water, soil erosion, wetlands, riparian areas, air quality, cultural resources, and firefighter/public safety. Additional issues are identified through the input from public and internal scoping meetings.

Agencies, cooperators, and other partners were invited to participate in a series of scoping meetings to help define management issues and goals. In addition, the public was invited to participate in a series of workshops designed to solicit comments, suggestions, and ideas (attendees are listed in Appendix D).

- A fire management planning workshop in June 2001 for agencies, cooperators, and other partners. Following the workshop, a newsletter describing the planning effort and issues already raised was released to the workshop participants and other interested

parties in December 2001. All newsletter recipients were invited to submit additional written comments for consideration.

- A Notice of Intent was published in the Federal Register in February 2002 announcing that SMMNRA was updating its Fire Management Plan, and encouraging public participation through public meetings and written comment within a six month period.
- Four public meetings were announced and publicized through media announcements and public invitations in late April/early May 2002. The meetings were held in Beverly Hills, Calabasas, Malibu, and Thousand Oaks, California. Participants were provided with background and information on four alternatives and asked to submit their comments in writing, if possible, to ensure accuracy.
- Two additional meetings were held in June 2002 to gain additional input on these four alternatives from fire agencies, cooperators, and other partners. Their written comments were also solicited.
- Fifteen invitations were sent to citizens with Native American affiliations, requesting their comments and concerns that the four alternatives may have on cultural activities, practices or resources.

All issues identified during scoping sessions have been documented in Appendix D. Some issues raised are of significant and widespread interest, while others were duplicate or beyond the scope of the plan. Issues raised at the June 2001 workshop and analyzed within the environmental assessment include:

1) Firefighter and public safety including: relocation of overhead power lines underground to reduce fire starts from arcing power lines; how to provide information to homeowners so that they implement those measures necessary to provide for their own safety in extreme wildfire; and how to refine existing risk analysis with factors such as density, ingress and egress, fuel loads, fire history to identify high-risk/high-priority areas using GIS and fire models.
2) Concentrate on fuels treatments at the wildland urban interface to optimize the effectiveness of property protection and to minimize impacts.
3) Operational and policy co-ordination among all the agencies within SMMNRA including consistent brush clearance policies and uniform emergency plans for all the agencies within SMMNRA.
4) The impact of fire management activities including suppression actions and promotion of the spread of invasive plants and animals.
5) The use of prescribed fire for restoration activities.
6) Appropriate land use planning.

Chapter Two

ALTERNATIVES

I Development of Alternatives

After all interagency and public scoping meetings, the interdisciplinary team developed a range of alternatives that responded to the wide range of comments offered during the agency workshop and other scoping meetings. The alternatives were structured around the fire management tools available to accomplish program goals and objectives. The alternatives are designed to provide effective fire protection at the wildland urban interface while protecting ecological and cultural resource values based on a realistic understanding of the nature of the vegetation and the fire climate of the Santa Monica Mountains. The fire management actions in all alternatives apply only to National Park Service (NPS) properties. Related activities such as coordination and consultation with local fire agencies, assessment of fire hazard, and public education apply to all private and public lands within the Santa Monica Mountains National Recreation Area (SMMNRA) boundary.

II Description of Alternatives

Terminology

Numerous terms are used throughout this document that describe the different tools used by fire managers. Since the alternatives in this assessment are organized around these tools, it is important to define the terminology that will follow:

1) **Wildland Fire Suppression** – means curtailment of fire spread and eliminates all identified threats from the direct and indirect effects of the fire.

2) **Mechanical Fuel Reduction** – also referred to as "mechanical projects," or "mechanical treatments," means reducing plant biomass with equipment, such as weed whips, brushcutters, or chainsaws, or piling and burning woody debris.

3) **Biomechanical Fuel Reduction** – means reducing plant biomass with biological means such as goat or sheep grazing.

4) **Weed Abatement** – is annual mowing or disking of herbaceous vegetation dominated by non-native annual grasses and forbs.

5) **Brush Clearance** – is fuel reduction in vegetation dominated by native shrubs.

6) **Prescribed Fire** – means management-ignited fire.

7) **Wildland Fire Use** – also referred to as "fire use" means the management of unplanned ignitions, such as lightning-caused fires, for resource benefit.

8) **Wildland Fire Suppression** – also referred to as "fire suppression," or simply "suppression," means the suppression of unwanted wildland fires.

9) **Strategic Fuels Treatment** – means reduction of plant biomass by either prescribed fire, mechanical or biomechanical fuel treatments in strategic locations that would modify fire behavior to the extent that it would limit fire spread, protect identified values at risk, or allow control of a fire perimeter. Excludes the defensible space created by mechanical fuel modification adjoining individual homes that is required by law in Los Angeles and Ventura Counties.

10) **Defensible Space** – an area around a home or other structure where vegetation is modified and maintained to slow the rate or reduce the intensity of an advancing wildland fire. It provides room for firefighters to safely work in and around structures. This space also reduces the probability that a structure fire will spread into the adjacent wildland vegetation.

8) **Average Fire Return Interval and Natural Fire Return Interval** – the average fire return interval is the average period of time between all fires for a defined geographic area and for a specific period of time. It is most simply determined by calculating the average time required to burn an area of vegetation equivalent to the defined geographic area of interest. The average fire return interval is also referred to as the average fire rotation interval or the average fire free interval. The natural fire return interval is the fire return interval that would be expected if fires were started only by non-human agents and no fire suppression occurred. In southern California the most common natural ignition source is lightning, although other potential ignition sources such as tumbling rocks have been suggested.

Alternatives

The four alternatives considered in the environmental analysis include a no action alternative (Alternative 1) and three additional alternatives. The National Environmental Policy Act (NEPA) requires agencies to consider a "no action" management alternative which provides a baseline condition for measuring the other alternatives.

- Alternative 1 – No Action (current program) Landscape Mosaic Prescribed Burning
- Alternative 2 – Mechanical Fuel Reduction/ Ecological Prescribed Fire/ Strategic Fuels Treatment
- Alternative 3 – Mechanical Fuel Reduction/ Ecological Prescribed Fire
- Alternative 4 – Mechanical Fuel Reduction (Wildland Urban Interface) / No Prescribed Fire

The current program or no-action alternative (NPS, 1994), involves watershed level prescribed burning to create a landscape mosaic of different age classes in shrubland communities to reduce fire hazard and maintain ecological health. The other alternatives are an additive hierarchy of

the available fire management techniques that are feasible and effective in the fire environment of the Santa Monica Mountains. The simplest alternative (Alternative 4) focuses primarily on mechanical fuel modification at the wildland urban interface. The next alternative includes interface mechanical fuel modification but also adds ecological prescribed burning (Alternative 3). The most complex alternative (Alternative 2) includes interface mechanical fuel modification, ecological prescribed burning and strategic fuels treatment. In addition to the combination of actions unique to each alternative, there are a number of fire management actions that are common to all alternatives and will be implemented irrespective of the final alternative selected. A brief description follows below.

Elements Common to all Alternatives

All alternatives include the following elements:

Complete suppression of wildfires
Wildfire suppression is essential to protect the complex interface of development and natural areas within the SMMNRA. However, even with aggressive suppression of all wildfire starts, there are periodic large wildfires and an unnaturally short average fire return interval. Fire suppression has not excluded fire from the SMMNRA and has not caused unnaturally high fuel accumulations. Fire suppression provides some ecological benefit by reducing the total number of acres burned in wildfires and marginally increasing the average fire return interval.

Coordination of vegetation management with local fire agencies to improve the effectiveness of fire suppression activities involving NPS lands
Through coordinated efforts with the local fire agencies, vegetation management activities can occur across jurisdictional boundaries, increasing the overall effectiveness of the treatments by providing for the utilization of strategic geographic features. Without interagency cooperation, fire agencies are restricted by political boundaries which often do not coincide with the physical features which provide for the optimum placement of vegetation management projects.

Consultation with local fire agencies to protect resources during suppression activities
Through the use of the Incident Command System the park will provide the primary suppression agency with information concerning sensitive resources that may be impacted during fire suppression operations. This consultation will assure that any impacts to cultural or natural resources are minimized and that resource protection is integrated in to the strategic planning of all fire suppression operations.

Assessment of wildland fire hazards to people, homes, and resources; use public support and education to reduce the associated risks
An essential element in addressing wildland urban interface (WUI) issues is determining what the hazards to humans, homes, and the surrounding natural and cultural resources are, and where they are located. Once these factors have been identified, then priorities will be established to reduce the associated risks to those assets. An indispensable part of reducing these risks is to have homeowners and residents assume personal responsibility for their properties. Park staff will provide education and assistance to this end.

Alternative 1 (No Action Alternative)

Continue the current NPS fire and vegetation management program to create a landscape mosaic of varying aged chaparral stands through the application of prescribed fire in separate watersheds; minimize brush clearance.

This alternative has the potential to be ecologically damaging to native plant communities by increasing the probability of shrubland type-conversion from a too-short fire return interval in the high fire frequency fire environment of the Santa Monica Mountains. It does not provide direct protection for residences by reducing fuel loads at the wildland urban interface because treatments are often remote from residential development because of the danger of prescribed fire escape. Prescribed fire in dense vegetation has the potential to escape and become a hazard itself. Alternative 1 does not provide effective control of wildfire spread under severe weather conditions because ecologically viable vegetation can not be maintained in the age class that might be effective in limiting wildfire spread under extreme wildfire conditions. Finally, large scale burning has not been feasible to implement in accordance with the goals of the previous *Fire Management Plan* because of regulatory constraints on prescribed fire, especially those relating to air quality standards.

Alternative 2

Prescribed burning is used to provide resource enhancement. In addition, hazard fuel reduction projects using prescribed fire or mechanical fuel reduction are considered in strategic locations that reduce the chance of wildfires which may damage life and property or impact natural and cultural resources. Short-term and site-specific resource impacts of strategic prescribed fires are weighed against long-term and regional hazard fuel reduction benefits. Strategic zones are identified using up-to-date analysis of vegetation types, fuel characteristics, fire spread models, and potential hazards to life, property, and natural and cultural resources. Mechanical or biomechanical fuel reduction is concentrated at the wildland urban interface to protect homes.

This alternative provides effective protection of homes by focusing mechanical fuel reduction at the interface between homes and wildland vegetation, and provides ecological benefits from resource prescribed burning. In addition, it provides potential ecological and community benefits where wildfire risk analysis can identify locations where strategic fuel modification projects can modify fire behavior to the extent that it would limit fire spread, protect social values, or allow control of a fire perimeter. This alternative requires that the ecological impacts from maintaining vegetation in a condition adequate to sustain strategic fuel modification benefits be explicitly identified and that the social and environmental cost:benefits be jointly weighed.

Alternative 3

Prescribed burning is used exclusively to provide resource enhancement including control of exotic species and restoration of natural communities. Mosaic burning is eliminated. Fuel reduction is concentrated at the wildland urban interface to protect existing development and emphasizes mechanical or biomechanical fuel modification.

This alternative provides effective protection of homes by focusing mechanical fuel reduction at the interface between homes and wildland vegetation, and provides ecological benefits from resource prescribed burning. It lacks the potential risk reduction benefits from strategic fuel modification.

Alternative 4

Vegetation management is limited to mechanical or biomechanical fuel modification at the wildland urban interface. Prescribed fire is eliminated.

This alternative provides effective protection of homes by focusing mechanical fuel reduction at the interface between homes and wildland vegetation, but lacks the ecological benefits of resource prescribed burning, and the potential risk reduction benefits from strategic fuel modification.

Table 2-1 Summary of Alternatives

Alternative 1 No Action (Current Program)	Alternative 2 Mechanical Fuel Reduction/ Ecological Prescribed Fire/ Strategic Fuels Treatment	Alternative 3 Mechanical Fuel Reduction/ Ecological Prescribed Fire	Alternative 4 Mechanical Fuel Reduction
General Description The current program is continued including use of prescribed fire to establish a shifting mosaic of different aged stands of chaparral, application of fire suppression, and use of mechanical treatments near existing st ructures on park and private properties.	**General Description** The program focuses on the strategic use of prescribed fire to reduce hazardous fuels, while considering ecological constraints and potential impacts, and to meet resource enhancement objectives. All other fires are suppressed, including infrequent lightning ignitions. Mechanical fuel reduction is used in and around developments that pre-date park acquisition, to buffer these sites from unplanned fires. Homeowner education is emphasized.	**General Description** The program focuses on the use of prescribed fire exclusively to meet resource enhancement objectives. All other fires are suppressed, including infrequent lightening ignitions. Mechanical fuel reduction is used in and around developments that pre-date park acquisition, to buffer these sites from unplanned events. Homeowner education is emphasized.	**General Description** The program focuses on mechanical fuel reduction in and around developments that pre-date park acquisition. All fires are suppressed. Homeowner education is emphasized.
Prescribed Fire Prescribed fire projects are used to establish a shifting mosaic of different aged stands of chaparral across the landscape.	**Prescribed Fire** Prescribed fire is used as a tool for targeted resource enhancement projects. In addition, hazard fuel reduction projects using prescribed fire are considered in strategic locations that reduce the chance of wildfires which may damage life and property, and impact natural and cultural resources.	**Prescribed Fire** Prescribed fire is used exclusively as a tool for targeted resource enhancement projects.	**Prescribed Fire** None. Prescribed fire is not used under this alternative.

Alternative 1 No Action (Current Program)	Alternative 2 Mechanical Fuel Reduction /Ecological Prescribed Fire /Strategic Fuels Treatment	Alternative 3 Mechanical Fuel Reduction /Ecological Prescribed Fire	Alternative 4 Mechanical Fuel Reduction
Wildland Fire Use None. All unplanned fires are suppressed.	**Wildland Fire Use** None. All unplanned fires are suppressed.	**Wildland Fire Use** None. All unplanned fires are suppressed.	**Wildland Fire Use** None. All unplanned fires are suppressed.
Wildland Fire Suppression All unplanned fires are suppressed.	**Wildland Fire Suppression** All unplanned fires are suppressed.	**Wildland Fire Suppression** All unplanned fires are suppressed.	**Wildland Fire Suppression** All unplanned fires are suppressed.
Mechanical/ Biomechanical Fuel Reduction Limited mechanical or biomechanical fuel reduction is used in developed areas and along boundaries.	**Mechanical/ Biomechanical Fuel Reduction** Mechanical or biomechanical fuel reduction is the ***primary*** tool for hazard fuel reduction along the wildland urban interface.	**Mechanical/ Biomechanical Fuel Reduction** Mechanical or biomechanical fuel reduction is the ***primary*** tool for hazard fuel reduction along the wildland urban interface.	**Mechanical/ Biomechanical Fuel Reduction** Mechanical or biomechanical fuel reduction is the ***only*** tool for hazard fuel reduction along the wildland urban interface.
Strategic Fuels Reduction None.	**Strategic Fuels Reduction** Hazard fuel reduction projects using prescribed fire or mechanical or biomechanical fuel reduction are considered in strategic locations that provide a measurable reduction in fire hazard risk to life and property or natural and cultural resources. The site-specific resource impacts from treatment are weighed against regional fire hazard reduction for short-term and long-term benefits and impacts.	**Strategic Fuels Reduction** None.	**Strategic Fuels Reduction**

III Quantification of the Amount of Managed Acreage by Alternative

The following tables (Tables 2-2 and 2-3) predict the range in the amount of acreage that is managed on the various park units according to each alternative for the five-year life of the fire management plan. Acres projected in the tables reflect the minimum and maximum area that would be managed by all treatment methods including fuel modification, prescribed fire, and fire suppression. Past experience has shown that fire activity varies widely from year to year due to both stochastic factors (ignitions) and large-scale climactic variations such as El Nino and La Nina. Therefore, the numbers included in these tables are intended only for comparison between alternatives over long time periods and do not represent specific annual targets to be achieved. These projections will be used for analysis purposes throughout the document.

To develop these projections, the interdisciplinary planning team estimated the acreage that would be affected by each management tool (mechanical fuel reduction, prescribed fire, and wildland fire suppression) under each alternative.

Table 2-2 Range of Projected Annual Acreage on NPS Lands Managed by Alternative Over the First Five Years.

Mechanical fuel reduction areas are mapped in Figure 2-1. Potential ecological prescribed burn locations are mapped in Figure 2-2.

TREATMENT ACRES							
	Mechanical Fuel Reduction		Prescribed Fire		Wildland Fire Suppression	Total Treated Acres	Five Year Totals
	Wildland Urban Interface	Cultural Resources	Ecological	Strategic			Treated
Alternative 1 No Action (Current Program)	86.2 acres/year	4.2 acres/year		1000 – 1500 acres/year (6540 acres/5 years) 1994 FMP for Natural Processes and Hazard Fuel Reduction (not achievable)	0 – 50,000 acres/year	1090 – 1,590 acres/year	6630 acres
Alternative 2 Mechanical Fuel Reduction / Ecological Prescribed Fire / Strategic Fuels Treatment	86.2 acres/year	4.2 acres/year	0 – 1100 acres/year 275 acres/project 4 projects/year maximum	0 – 300 acres/year 150 acres/project 2 projects /year maximum (750 acres/5 years) NEPA & NHPA review and documentation required for individual projects	0 – 50,000 acres/year	90 – 1490 acres/year	450 – 7450 acres
Alternative 3 Mechanical Fuel Reduction / Ecological Prescribed Fire	86.2 acres/year	4.2 acres/year	0 – 1100 acres/year 275 acres/project 4 projects/yr maximum	0 acres/year	0 – 50,000 acres/year	90 – 1190 acres/year	450 – 5950 acres
Alternative 4 Mechanical Fuel Reduction	86.2 acres/year	4.2 acres/year	0 acres/year	0 acres/year	0 – 50,000 acres/year	90 acres/year	450 acres

Figure 2-1 Map of WUI Mechanical Fuel Modification Zones on NPS Lands

Acreage for each park unit is listed in Table 2-3.

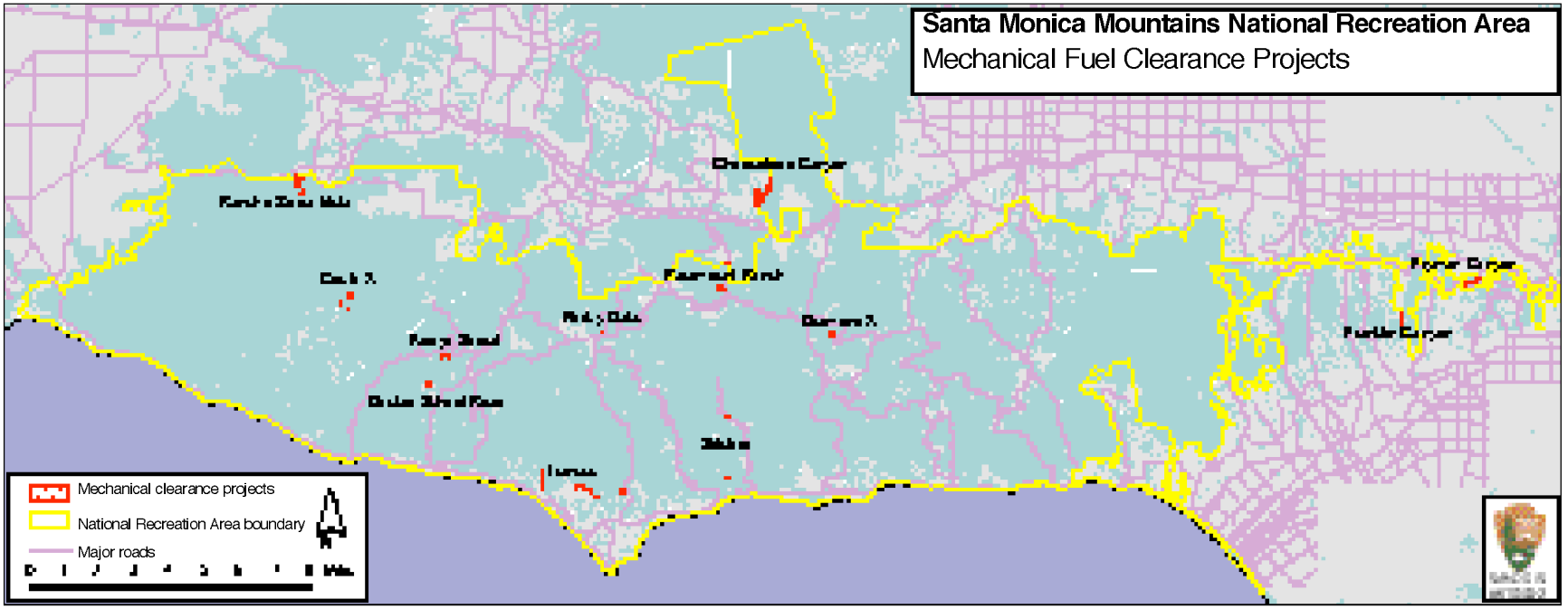

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Table 2-3 Fuel Modification and Prescribed Burn Areas on NPS Lands by Park Unit

Park units are mapped in Figure 2-3. Wildland Urban Interface (WUI) hazard reduction zones are mapped in Figure 2-1. Potential ecological prescribed burn areas are mapped in Figure 2-2. The acreage for ecological prescribed burn represents the total area within each park unit of plant community types that are potentially appropriate for restoration using prescribed burning.

Park Unit (NPS park parcels see map)	Vegetation Type	Time since last burn	Unit size	Housing Density Downwind	WUI Hazard Reduction	Ecological Prescribed Burn
LARGE TRACTS						
Zuma/Trancas	Chap/CSS	1978	6300	High	**16.1**	
Cheeseboro/ Palo Comado	Chap/CSS/ Oak/Grass	1982	4500	High	**22**	**865**
Circle X & Malibu Springs	Chap/RSH/ Rip/CSS	1993, 1956, 1985	4500	Low	**11.6**	
Paramount	Chap/CSS/ Oak/Grass	1982, 1978	760		**5.8**	**96**
Castro Crest	Chap/Oak CSS	1982	1400	Low		
Rancho Sierra Vista	Chap/CSS/ Grass	1993	1200	Low	**12.8**	**275**
Deer Creek	Chap/CSS/ Riparian	1993, 1989	460	Low		8
Arroyo Sequit	Chap/CSS	1985(80%) 1956(20%)	160	Low	**2.3**	
Westlake	Chap	1978	150			
Rocky Oaks	Chap/VOak /Riparian	1978	200	Low	**0.9**	
Yellow Hill	Chap/CSS /Grass	1993	400	High		
Serrano	Chap	1993	230	Low		
Hondo Canyon	Chap	1993	165	Medium		
Peter Strauss Ranch	Chap/Oak	1978	80	Low		
Solstice Canyon	Chap/Oak /Riparian	1996, 1982	550	Low	**1.4**	
Liberty Canyon	CSS/Oak /Grass	1993, 1982 1984, 1931	410	High		
SMALL TRACTS						
Franklin Canyon	Chap/Oak/ CSS/Riparian	pre-1925	110	High	**4.2**	
Fryman Canyon	Chap	pre-1925	70	High	**3.4**	
Las Flores / Camp	Chap	1993 (95%)	120	High		
Carlisle	Chap	1993	80	Low		
Pacific View	Chap/CSS	1993 1989	40	V Low		
Etz Meloy	Chap/Grass	1985	155	Low		

Park Unit (NPS park parcels see map)	Vegetation Type	Time since last burn	Unit size	Housing Density Downwind	WUI Hazard Reduction	Ecological Prescribed Burn
Triunfo	Chap/Grass	1985	25	Low		
Little Sycamore	Chap	1993	60	Low		
Malibu Springs satellite	Chap	1956	10	Low		
Nicholas Flats	Chap	1956 (50%) 1985 (50%)	23	High		
Decker School	Chap/CSS	1985	80	High	1	
Decker Canyon	CSS/Riparian	1985	50	High		
Lower Brewster	Oak/Chap	1978	38	Low		
Seminole Hot Springs and Hennesy	Chap/Oak	1978	250	Low		
Malibu Lake	Chap	1978 (40%) 1958 (10%) pre 1925 (50%)	57	Low		
Ramirez Canyon	Chap	1978(95%) 1982 (5%)	47	Low		
Malibu Vista	Chap	1982	25	Low		
Corral Canyon (Malibu Bowl)	Chap	1982	105	Medium	0.8	
El Nido	Chap	1996 (80%) 1970 (15%) 1982 (5%)	80	Medium		
Diamond X West	Chap/CSS	1996 (80%) 1970 (20%)	18	Low		
Diamond X East	Oak/Chap /VOak/CSS	1996	22	Low	3.9	3
Monte Nido	Chap		5	Low		
Piuma	CSS/Chap	1993(80%)) 1996 (20%)	6	Low		
Saddle Peak	Chap	1993	15	Medium		
Fishhook	Chap/ Walnut	Pre-1925	14	High		
Topanga NW	Chap/CSS	1961	43	Low		
Topanga Oaks	Grass/Chap	1993	15	High		8
Tuna Canyon	Chap	1993	25	High		
TOTAL [1/]					86.2	1255

1/ Of 86.2 acres of WUI mechanical fuel modification, 78.5 acres are weed abatement, 7.7 acres are brush clearance.

KEY

Chap	chaparral	Grass	grassland	CSS	coastal sage scrub
Oak	oak woodland	VOak	valley oak savanna	Rip	riparian

Mechanical Fuel Reduction Projects

Mechanical fuel reduction is proposed in all alternatives. Wildland urban interface (WUI) fuel reduction is located in those areas where the park has inherited or established and maintained a fuel break between park properties and pre-existing development. Because Los Angeles and Ventura Counties do not permit new development that requires vegetation clearance on park property, there should be no need to expand the zone of mechanical fuel modification beyond those areas that are already maintained by the park. Additional fuel reduction is performed as part of maintenance actions around cultural resource sites and is limited to 4.2 acres. The size of the average WUI mechanical fuel reduction projects is 6 acres, with projects ranging from 1-22 acres (Table 2-3). To maintain the effectiveness of the fuel modification zones, herbaceous vegetation needs to be reduced annually, while shrubs and trees need to be limbed or removed only every few years.

As part of planning for mechanical fuel reduction projects, individual sites will be assessed by qualified park staff for the presence of special status species and for significant cultural resources. Site specific recommendations for protection of sensitive resources will be incorporated into planning and implementation, and the project would proceed only if the balance between protecting sensitive resources and private property was consistent with NPS policy and other legal requirements.

Should "adverse effect" or "incidental take" of any threatened or endangered species be expected by implementation of site specific projects, supplemental environmental compliance would be pursued.

Wildland Fire Suppression

Under all alternatives, suppression activities will include a full range of tactics to confine, contain, and control wildland fires. All suppression actions would follow minimum impact suppression guidelines (Appendix C) and would include appropriate burned area emergency rehabilitation of firelines and other effects of the suppression action.

Expected sizes of suppression incidents range from extremely small (<0.1 acre) to very large. Several suppression incidents near and within the recreation area boundary in the 1990's have ranged from 10,000 to 38,000 acres. Larger fires are possible though rare.

When determining suppression tactics, collateral damage to park resources as a result of the proposed suppression action will be considered as long as firefighter and public safety, and private property are not jeopardized.

Prescribed Fire Projects

Prescribed fire would be used in Alternatives 1, 2 and 3. Alternative 1, the no action alternative, places the most emphasis on this tool, followed by Alternative 2 then 3. Alternative 1 would use

prescribed fire as in the past; however, the goals have proved unachievable in the past due to the constraints associated with prescribed burning in a high-population area.

Alternative 2 has more realistic goals for achieving prescribed fire projects. Alternative 3 also has realistic goals for achieving prescribed fire projects; however this tool would be used for restoration purposes only, not for considering strategic areas for hazard fuel reduction. In all cases, projects would generally not exceed 275 acres at any one time. It is expected that the largest projects would be approximately 150 acres. There is also the potential for very small (<10 acres) experimental research burns.

Strategic Fuels Reduction Projects

Strategic fuels reduction is proposed only in Alternative 2. The park has proposed 150 acres/project with a maximum of 2 projects/year as the amount of acreage on NPS properties that could realistically and reliably be treated by park personnel in co-operation with their partner agencies. Any strategic fuels reduction project would require a separate environmental assessment and a risk/benefits analysis that could demonstrate a measurable increase in operational wildfire management ability or a quantifiable reduction in fire hazard risk in accordance with the decision model outlined in Figure 3-23.

Wildland Fire Use

All alternatives including this tool (management of unplanned ignitions for resource benefit) have been rejected because wildland fire use is not feasible to implement in high-population areas without being a considerable threat to public safety.

Annual Planning

Each year park managers would develop a detailed plan describing projects that are planned for implementation that year. Individual projects would fall within the scope of the descriptions above. Table 2-4 outlines the limitations or constraints that would exist for both projects and annual programs.

Table 2-4 Summary Scope of Individual Projects and Annual Program on NPS Lands

Alternative 1 No Action (Current Program)	Alternative 2 Mechanical Fuel Reduction/ Ecological Prescribed Fire/ Strategic Fuels Treatment	Alternative 3 Mechanical Fuel Reduction/ Ecological Prescribed Fire	Alternative 4 Mechanical Fuel Reduction
Mechanical Fuel Reduction Project Size: 90 acre maximum Number of Projects/ Year: See Table 2-3	**Mechanical Fuel Reduction** Project Size: 90 acre maximum Number of Projects/ Year: See Table 2-3	**Mechanical Fuel Reduction** Project Size: 90 acre maximum Number of Projects/ Year: See Table 2-3	**Mechanical Fuel Reduction** Project Size: 90 acre maximum Number of Projects/ Year: See Table 2-3
Ecological Prescribed Fire Projects 0	**Ecological Prescribed Fire Projects** Project Size: 275 acre maximum Number of Projects/ Year: 4	**Ecological Prescribed Fire Projects** Project Size: 275 acre maximum Number of Projects/ Year: 4	**Ecological Prescribed Fire Projects** 0
Strategic Fuels Projects Project Size: 1500 acre maximum Number of Projects /Year: 2	**Strategic Fuels Projects** Project Size: 150 acre maximum Number of Projects /Year: 2	**Strategic Fuels Projects** 0	**Strategic Fuels Projects** 0
Wildland Fire Use Projects 0	**Wildland Fire Use Projects** 0	**Wildland Fire Use Projects** 0	**Wildland Fire Use Projects** 0
Wildland Fire Suppression Actions Project Size: any size Number of Projects/ Year: variable unknown	**Wildland Fire Suppression Actions** Project Size: any size Number of Projects/ Year: variable unknown	**Wildland Fire Suppression Actions** Project Size: any size Number of Projects/ Year: variable unknown	**Wildland Fire Suppression Actions** Project Size: any size Number of Projects/ Year: variable unknown

IV Alternatives Considered But Rejected

Three alternatives were considered but rejected from further consideration because the interdisciplinary team determined that they were not feasible for one or more specific reasons.

- **Alternative 5** – Suppression Only/No Vegetation Manipulation
- **Alternative 6** – Mechanical Fuel Reduction on a Landscape Level
- **Alternative 7** – Wildland Fire Use

In particular, the alternatives were inconsistent with NPS policies and guidelines, were a threat to public safety, were logistically infeasible, or were inconsistent with the goals of the fire management program. A summary of specific rejection criteria for each alternative are indicated in Table 2-5.

Table 2-5 Rejected Alternatives

Justification For Rejection	Alternative 5 Suppression Only / No Vegetation Manipulation	Alternative 6 Mechanical Fuel Reduction on a Landscape Level	Alternative 7 Wildland Fire Use
Inconsistent with NPS Policies and Guidelines	X	X	
Threat to public safety if implemented	X		X
Logistically infeasible to implement along wildland urban interface			X
Inconsistent with objectives of SMMNRA Fire Management Program	X	X	

V Environmentally Preferred Alternative

Alternative 2 is the environmentally preferred alternative. It provides the maximum potential environmental benefits and minimizes the adverse impacts of fire management actions. Alternative 2 is the most flexible alternative, utilizing all available fire management strategies identified to be appropriate in the Santa Monica Mountains.

Alternative 1 is inappropriate and the most environmentally damaging alternative in the fire climate of the Santa Monica Mountains. Alternative 4 effectively addresses structure protection at the wildland urban interface, but does not provide any of the ecological benefits from the ecological prescribed burning included in Alternatives 2 and 3. Alternative 2 is considered superior to Alternative 3 because it would not eliminate the potential benefits from strategic fuels reduction. Although strategic fuels reduction has the potential for both impacts and benefits in most of the impact areas analyzed, individual strategic fuels reduction projects would be evaluated for their potential risk:benefit ratio according to the analytical procedure outlined in the discussion of fire hazard assessment (Figure 3-18).

VI Mitigation Matrix

Table 2-6 Mitigation Measures to Reduce Wildland Fire and Fire Management Impacts

Issue	Potential Impact	Mitigation Actions
Vegetation	Wildfire suppression operational impacts – native vegetation loss, habitat fragmentation, weed invasion	Existing roads, fuel breaks, and trails should be used for fire lines; new line construction should be limited to the greatest extent feasible. Sensitive habitats that could be impacted by operational activities should be identified by NPS on a GIS database and made available at the Incident Command Post. Fire operations should avoid sensitive habitat areas, especially streams and woodlands, to the maximum extent feasible. Suppression activities should minimize impacts in accordance with the operational guidelines in Appendix C. Trees should be avoided and preserved during line construction and other operations requiring vegetation clearance, to the maximum extent feasible. NPS GIS weed maps should be made available at the Incident Command Post. Suppression activities that could promote weed spread should be minimized. Fire lines should be restored to natural grade and to conditions that will encourage native plant growth and avoid weed invasions. Monitor for weed invasion from fire activities and provide for removal if necessary. See Appendix E for invasive species and weed management plans.
	Fuel modification – loss of native vegetation, weed invasion	All park fuel modification zones should be monitored for the presence of serious invasive plant species. Species known to be aggressive invaders of wildland areas, particularly perennial herbs and shrubs, should be controlled as part of the mechanical fuel treatment activity. See Appendix E for invasive species and weed management plans. Where topography permits, annual grasslands should be mowed rather than disked.

Issue	Potential Impact	Mitigation Actions
		Develop a clear policy statement and procedures to assess existing and potential fuel modification responsibility for properties at the private/public interface with federal parkland. See Appendix A for example. NPS should continue to consult with Los Angeles County and Ventura County Fire Prevention and Planning Departments on structure siting adjacent to park property so that fire safety for new development can be ensured without vegetation clearance on park properties.
	Unnecessary vegetation removal and conversion that degrades habitat without increasing fire safety; fire ignitions	To minimize fuel modification zones, the NPS and other agencies should work together to identify the amount of fuel modification required to protect structures from radiative heat loss or from loss due to direct flame impingement. The NPS should analyze the potential cumulative habitat impacts from fuel modification that exceeds the amount neces sary to protect structures (e.g. 100' vs. 200'). The NPS and other agencies should continue to co-operate and improve outreach methods to inform residents about appropriate fuel modification techniques to preserve native species; the use of appropriate native landscaping; the importance of limiting non-natives that increase fuel load; the importance of limiting irrigation; the importance of preserving slope vegetation; and appropriate structure siting to limit the size of the required fuel modification zone. The NPS and other agencies should continue to co- operate in all activities that promote fire prevention in order to reduce fire frequency. Direct park actions include park closures during extreme weather and appropriate limitations on camp fires. The NPS should continue to evaluate the cause of fires and support projects that effectively limit fire starts especially arson and power line ignitions. Road clearing projects should be evaluated for effectiveness.

Issue	Potential Impact	Mitigation Actions
Wildlife	See Vegetation.	See Vegetation.
Habitat Connectivity	Habitat fragmentation effects exacerbated by wildfire and suppression operations of habitat fragmentation.	The NPS and other agencies should work together to identify and protect large, continu ous blocks of natural habitat to reduce impacts Fire prevention and suppression techniques should be utilized to reduce the probability of large-scale, catastrophic wildfires in natural areas. See Vegetation.
	Inadequate data available to evaluate impacts due to interaction between wildfire and habitat fragmentation	Additional research and monitoring should be undertaken to further understand the relation ship between fire and habitat fragmentation. Top priority research needs include: • Effects of fire on wildlife under different fire sizes, shapes and intensities, including wildfire and prescribed fire. • Influence of surrounding human-modified landscapes on post-fire wildlife recovery pat-terns. • Role and significance of fire as a potential extinction mechanism and edge effect facili-tator in fragmented habitats.
Invasive Species	Wildfire suppression operational impacts that promote spread of invasive species	See Vegetation.
	Inappropriate fire hazard management by residents	The NPS and other agencies should to continue to co-operate and improve outreach methods to inform residents about appropriate fuel modification techniques to preserve native species; the promotes weed spread use of appropriate native landscaping; the importance of avoiding invasive non-native species.

Issue	Potential Impact	Mitigation Actions
	Hazard reduction projects promote weed spread	Road clearing projects should be evaluated for effectiveness and avoid increasing the area occu pied by non-native species.
Rare, Threatened, and Endangered Species	Wildfire suppression operational impacts damage or destroys sensitive species or habitat	**Incident Command Consultation**. To avoid operational impacts to populations of sensitive species, it is necessary that sensitive habitat be identified and avoided, to the maximum extent feasible, in accordance with the guidelines in Appendix C. The geographic location and indi vidual vulnerabilities of sensitive species may not be available to the firefighting agencies man aging the fire control operations. As with cult-tural resources information, the NPS should provide a resource advisor for biological consul-tation to the Incident Command Post. At mini-mum, this should include a qualified biologist with the sensitive species GIS database who can make recommendations to minimize impacts to any sensitive species potentially affected by fire control operations.
	Fire effects on resident wildlife species in ecological restoration areas	Survey all areas for the presence of resident sensitive wildlife species. If present, modify burn plans as necessary to avoid adverse impacts.
	Lack of adequate information	**Post-Fire Monitoring Program**. The park should be prepared to monitor any sensitive plant populations that experience wildfire in order to develop basic information on fire effects in these species. **Sensitive Species Database**. Basic information on species response to fire should be collected through literature review and field observation. Fire response information should be incorpo-rated into the sensitive species database as part of the I & M program.
Geology and Soils	Wildfire suppression – accelerated erosion from operational impacts	Existing roads, fuel breaks and trails should be used for fire lines; new line construction should be limited to the greatest extent feasible.

Issue	Potential Impact	Mitigation Actions
	Unmitigable erosion impacts from inappropriately sited structures	Work with local jurisdictions to develop ordinances to require structure siting to be setback from steep slopes and ridgetops to avoid shrub removal and annual fuel modification on steep slopes.
	Reduce soil erosion and the potential for mass movement in fuel modification zones in fuel modification zones	The NPS and other agencies should work together to identify the amount of fuel modification required to protect structures from radiative heat loss or from loss due to direct flame impingement. The NPS should analyze the potential cumulative habitat impacts from fuel modification in fuel modification zones that exceeds the amount necessary to protect structures (e.g. 100' vs. 200'). The NPS and other agencies should continue to co-operate and improve outreach methods to inform residents about appropriate fuel modification techniques to preserve native species; the use of appropriate native landscaping; the importance of limiting non-natives that increase fuel load; the importance of limiting irrigation; the importance of preserving slope vegetation; and appropriate structure siting to limit the size of the required fuel modification zone.
Water Resources/ Wetlands	Avoid direct operational impacts to water resources and wetlands	Sensitive riparian or other wetlands that could be impacted by operational activities should be identified by NPS on a GIS database and made available at the Incident Command Post. Fire operations should avoid stream and wetland areas, where feasible. Suppression activities should minimize impacts to the maximum extent feasible in accordance with the operational guidelines in Appendix C. Fire lines should be restored to natural grade and to conditions that will encourage native plant growth and avoid weed invasions.
	Avoid direct fuel modification impacts to water resources and wetlands	Fuel modification should be avoided in riparian areas and a 100' minimum buffer area provided between riparian/wetland vegetation and fuel modification zones.

Issue	Potential Impact	Mitigation Actions
Coastal Resources	Inadequate information available to understand the impact of wildfire sediments on rocky intertidal and sub-tidal habitat	Additional research and monitoring should be undertaken to understand the relationship between fire-derived sediments and rocky habi tat including: • Are the suspended sediments observed in the water column off the Malibu Coast due to re-suspension of bottom sediments or to increased rates of terrestrial erosion? • Is the pulse of sediments from post fire years with high rainfall a contributing factor to the fluctuation in kelp bed distribution and population size?
Paleontological Resources	Wildfire Suppression – Operational Impacts	**Incident Command Consultation**. To avoid operational impacts to paleontological resources, it is necessary that paleontological resources be identified and avoided, where feasible. The geographic location and individual vulnerabilities of paleontological resources may not be available to the firefighting agencies managing the fire control operations. As with cultural and biological resources information, the NPS should provide for paleontological resources consultation to the Incident Command Post. At minimum, this should include a qualified GIS specialist with the paleontological resources GIS database who can make recommendations to minimize impacts to any paleontological resources potentially affected by fire control operations. Areas with fossil resources that might be exposed and vandalized following wildfire should be closed to public access and monitored by enforcement personnel.
	Information Needs	Post-Fire Monitoring Program / Paleontological Database. Following fire, the park should be prepared to survey appropriate formations within burn areas and areas of erosion or slope failure for the presence of fossil deposits that were previously inaccessible.

Issue	Potential Impact	Mitigation Actions
Air Quality	Smoke impacts from Ecological Prescribed Burning or Strategic Fuel Modification	Burn days will be selected for their ability to transport smoke to upper elevations and lessen the impacts to the local populations. **Identification of Smoke Sensitive Areas**. All high density populous communities should be considered Smoke Sensitive Areas. Burns will be planned to carry smoke away from smoke sensitive areas. Maps of smoke sensitive areas relative to the burn unit will be included in the burn plan (paper version). The map will indicate all possible directions that smoke may impact communities. Residents adjacent to prescribed burns will receive a minimum of 48 hour notification prior to burning. If hazardous or unhealthful smoke conditions occur and become difficult to control under prescribed burn status, the fire can be declared a wildfire in order to cease ignition and suppress it with a full brush response available from Los Angeles and Ventura County Fire Departments. Unhealthful conditions are defined as chronic smoke that exceeds federal ambient air standards (PM-10 exceeding 150 /mg for 24 hours) in a smoke sensitive area. Further ignition is precluded. and immediately reverses the smoke production trend If hazardous or unhealthful smoke conditions are observed (visibility less than three miles) in smoke-sensitive areas, the Fire Management Officer will advise the Chief Ranger and the Public Information Officer. The Fire Information Officer will coordinate notification about the smoke conditions and provide information about potential health impacts, after consultation with the Burn Boss and Fire Management Officer. The Superintendent has the option to close the park area impacted or have the local rangers advise visitors to leave areas impacted by unhealthful smoke, the Fire Information Officer would advise the media and answer phone calls.

Issue	Potential Impact	Mitigation Actions
	Engine emissions from Mechanical Fuel Modification	Offroad diesel-powered equipment not be left idling for more than 5 minutes and it will be maintained in good condition and in proper time.
Cultural/ Historic Resources	Minimize fire and operational impacts that damage or destroy cultural resources; inadequate information available to provide resource protection	Pre-Action • Cultural resources will be considered during all fire management planning efforts. • Fire management personnel and other staff will receive annual training on cultural resources and fire management actions. • All cultural resources will be evaluated with respect to hazardous fuel loads for prescribed fires. As needed, fuel loads will be reduced using methods commensurate with avoiding or minimizing adverse effects. Maintaining light fuel loads on and in close proximity to cultural resources will be emphasized. • All areas slated for ground disturbing activities will be subjected to pre-action field surveys. This includes areas likely to be disturbed during future wildfires. • Pre-burn survey will be conducted prior to all prescribed burns as dictated by resource distribution and vulnerability, vegetation and topography, and expected fire behavior. • Consultation with local Native American communities will continue to occur in the context of fire management actions. Spiritual sites and important plant communities will be identified and appropriately managed for preservation, maintenance, and/or enhancement. • Computer and other databases containing cultural resources data will be created and maintained, and made available to fire management personnel in the event of emergencies. • Cultural resources specialists from adjacent land management agencies will be consulted in order to coordinate mitigation efforts prior to planned and unplanned fire management actions. • Appropriate cultural resources monitoring protocols will be established and implemented. • Potential research opportunities to study the

Issue	Potential Impact	Mitigation Actions
		effects of fire management actions on cultural resources will be identified. During-Action • A cultural resource specialist or resource advisor will be present during all fire management actions where recorded and unrecorded resources of interest are considered at risk. Additional surveys will be conducted on an as-needed basis. • Observations of fire behavior and other variables will be made with respect to recorded cultural resources and/or areas with high probability of containing unrecorded cultural resources. • Cultural resources data will be shared with fire management personnel as needed to avoid or minimize adverse effects. • A cultural resource specialist or resource advisor will educate fire management personnel about cultural resources and the potential impacts of fire management actions. Post-Action • The post-action condition of all recorded cultural resources will be assessed. Resources requiring stabilization or other treatment will be mitigated. • As appropriate, post-action survey will be conducted in previously surveyed and unsurveyed areas. Previously unrecorded cultural resources will be assessed for condition, and stabilization and other protection needs. • Monitoring and research data will be compiled, evaluated, and used to help refine cultural resource compliance for fire management actions.
Land Use	Amount of area type converted by fuel modification	See Vegetation – fuel modification items #3 and #4.
	Inappropriately sited development creates a fire safety hazard and a degraded environment	NPS should work with local governments to develop appropriate zoning for structure siting, design, and construction materials in order to avoid development that creates irreconcilable conflicts between fire safety and environmental impacts.

Issue	Potential Impact	Mitigation Actions
Recreation	Trail proliferation along fire lines	Fire lines should be posted and monitored to avoid creating new and undesirable trails after preescribed burns and wildfires.
	Adverse perception of fire as "damaging"	Education walks should be developed on wild fire sites to view wildflower displays that occur in the first two years following wildfires and to educate the public about the fire adapted nature of the Santa Monica Mountains plant communities. Education programs/walks should be developed at prescribed ecological fire sites to show the beneficial uses of fire and the plant restoration needs in the Santa Monica Mountains.
Scenic Resources		
Health and Safety	Wildfire suppression – danger to firefighter safety	Provide for firefighter safety as a first priority.
	Wildfire suppression – residents overwhelmed by rapid fire spread	To prevent loss of life and injury, promote the development of evacuation plans by local agencies and adequate defensible space as a highest priority for community safety. Work with local jurisdictions to develop appropriate zoning to limit new residential development in areas that lack safe ingress and egress due to mid-slope road location, length of access, and heavy fuel load.
	Potential health impacts from smoke from prescribed burns	Provide a minimum of 48 hour notice to residents adjacent to prescribed burn areas.
Reduce Risk of Catastrophic Events	Frequency of catastrophic fires	The NPS and other agencies should to continue to co-operate in all activities that promote fire prevention in order to reduce fire frequency. The NPS should continue to evaluate the cause of fires and support projects that effectively limit fire starts especially arson and power line ignitions.